UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CARDIAQ VALVE TECHNOLOGIES, INC.,	*	
Plaintiff,	*	
v.	*	Civil Action No. 14-cv-12405-ADB
NEOVASC INC. and NEOVASC TIARA INC.,	*	
Defendants.	*	

MEMORANDUM AND ORDER

April 25, 2016

BURROUGHS, D.J.

CardiAQ Valve Technologies, Inc. ("CardiAQ") brought this lawsuit against Defendants Neovasc Inc. and Neovasc Tiara Inc. for fraud, misappropriation of trade secrets, breach of contract, breach of the implied covenant of good faith and fair dealing, violation of Mass. Gen. L. ch. 93A ("Chapter 93A"), and correction of inventorship under 35 U.S.C. § 256. The Defendants, both Canadian companies, now seek summary judgment on CardiAQ's fraud, Chapter 93A, and correction of inventorship claims. For the reasons set forth below, the Motion is GRANTED IN PART. Specifically, the Court grants summary judgment on the fraud count (Count IV) and denies summary judgment as to the inventorship and Chapter 93A counts (Counts I and VI).

I. Factual Background

The following facts are undisputed, unless otherwise noted. Additional relevant facts will be discussed as needed in this Memorandum.

Heart surgeon Dr. Arshad Quadri ("Dr. Quadri") and medical device engineer Brent Ratz ("Mr. Ratz") founded CardiAQ Valve Technologies, Inc. ("CardiAQ") in Massachusetts in 2006. [ECF No. 328 ¶ 7]. CardiAQ's goal was to develop replacement valve technology for the treatment of mitral regurgitation, one of the most common forms of heart disease. Id. ¶ 8. Mitral regurgitation can be treated by replacing the mitral valve, and currently, the only way to replace the mitral valve is through open heart surgery. Id. ¶ 9. CardiAQ's focus is on developing a transcatheter mitral valve implant ("TMVI") that can replace a malfunctioning native mitral valve without open heart surgery. Id. ¶¶ 8-12. The TMVI device is intended to be delivered into a patient's heart through a "transcatheter" procedure, by which a catheter is inserted through a small incision in a patient's leg. Id. ¶ 11. By June 2009, CardiAQ had developed a prototype of its TMVI device. Id. ¶ 13. The device consists of two components: (1) an expandable metal frame and (2) valve leaflets made from animal tissue that are sewn to the metal frame. Id. ¶ 10.

On June 4, 2009, Brian McPherson, the Vice President of Operations and President of the Surgical Products division at Neovasc Inc. ("Neovasc") sent an unsolicited email to Mr. Ratz advertising Neovasc's products and services. [ECF No. 64-1 at 2]. Mr. McPherson stated that Neovasc was the only supplier of "custom pericardial tissue actively supporting companies developing minimally invasive heart valves," and that he was confident CardiAQ could benefit from Neovasc's services. Id. Mr. McPherson attached a 15-page presentation to the email. Id. at 3-17. The presentation stated that Neovasc "develops, manufactures and sells products used by interventional cardiologists, vascular surgeons and other MD's" and that its "core products" were "implantable pericardial tissue technologies" and the "Reducer^{TM} Stent for refractory angina." Id. at 4. Most of the presentation focused on Neovasc's Surgical Products division. It stated that the Surgical Products division's "primary focus is providing biological tissue materials and

associated development and manufacturing services to [its] customers" who are "typically industry partners who incorporate Neovasc pericardial tissue materials into their own products." Id. at 5. The presentation described Neovasc's two tissue processing technologies, its production facility, and its management team. Id. at 6-17.

Mr. Ratz responded that same day to indicate his interest in learning more about Neovasc's capabilities. [ECF No. 304-7 at 32]. Before speaking with Mr. McPherson, Mr. Ratz suggested that the parties execute a Non-Disclosure Agreement. Id. Mr. Ratz emailed Mr. McPherson CardiAQ's standard agreement, and Mr. McPherson responded that he would rather use Neovasc's. Id. On June 4, 2009, the parties executed Neovasc's Non-Disclosure Agreement (the "NDA"), agreeing that the recipient of "Confidential Information"[1] could not use or disclose such information for "any purpose other than evaluating the proposed business relationship." [ECF No. 64-2]. The parties agreed that the recipient of Confidential Information could not "directly or indirectly, disclose any Confidential Information to any third party or use the Confidential Information for its own benefit or for the benefit of any third party." Id. The NDA had a five-year term, and was governed by the laws of the Province of British Columbia. Id.

The parties subsequently entered into a brief business relationship. Between June 2009 and March 2010, Neovasc provided CardiAQ with animal tissue and related services for CardiAQ's TMVI device. [ECF No. 316 ¶ 14]. In the roughly 10-month period that CardiAQ

[1] Confidential Information is defined in the NDA as "any oral or written information received from the Discloser which is not generally known to the public . . . . Confidential Information includes, by way of example and not limitation, information of a technical sense such as trade secrets; manufacturing processes or devices; current products or products under development; research subjects; methods and results; matters of a business nature such as information about cost, margins, pricing policies, markets, sales, suppliers and customers; product, marketing or strategic plans; financial information; personnel records and other information of a similar nature." [ECF No. 64-2].

worked with Neovasc, engineers from CardiAQ and Neovasc exchanged hundreds of technical e-mails and had regular phone calls, averaging about one call a month. [ECF No. 328 ¶ 25]. In addition, CardiAQ sent Neovasc at least a dozen metal frames reflecting the evolving design of its TMVI device. Id. at 24. Neovasc engineer Randy Lane was a primary point of contact for CardiAQ, and Mr. Ratz disclosed extensive technical details about CardiAQ's TMVI device directly to Mr. Lane. Id. at 26.

In this action, CardiAQ alleges that Neovasc surreptitiously used the information disclosed to it by CardiAQ to develop a competing TMVI device (the "Tiara") and to patent a related method. [ECF No. 64]. According to CardiAQ, starting in October 2009, when Mr. Lane drew a sketch of what would become Neovasc's own TMVI device, "Mr. Lane began using CardiAQ's confidential information to develop Neovasc's own competing mitral valve." [ECF No. 315 at 7]. CardiAQ asserts that "[h]ad [it] known that Neovasc was developing its own TMVI device, using the very same engineer that had worked on its project, [it] never would have continued to disclose confidential information to Neovasc." Id. at 8. Neovasc never directly informed CardiAQ about its internal TMVI program, and CardiAQ claims it first learned of Neovasc's TMVI project in 2011, when it discovered one of Neovasc's published patent applications. [ECF No. 328 ¶ 56]. CardiAQ contends that Neovasc's development of a competing TMVI device: (1) breached the NDA and the covenant of good faith and fair dealing (Counts II and III); (2) constituted fraud (Count IV); (3) involved the misappropriation of CardiAQ's trade secrets (Count V); and (4) violated Mass. Gen. L. ch. 93A (Count VI).

CardiAQ has also brought a claim for correction of inventorship, under 35 U.S.C. § 256 (Count I), in connection with Neovasc's TMVI development. On November 12, 2013, the United States Patent and Trademark Office issued U.S. Patent No. 8,579,964 (the "'964 Patent") to

Neovasc. The ’964 Patent, directed to a method of anchoring a valve into the heart, lists Randy Lane and Colin Nyuli, both Neovasc employees, as the inventors. The ’964 Patent contains one independent claim (Claim 1) and 27 dependent claims (Claims 2-28). CardiAQ contends that Dr. Quadri and Mr. Ratz invented the subject matter of independent Claim 1 and dependent Claims 2 through 28 of the ’964 Patent, either by themselves or in collaboration with Lane and Nyuli, and seeks an order requiring Neovasc and the Director of the United States Patent and Trademark Office to take all steps necessary to correct the named inventor on the ’964 Patent.

CardiAQ initiated this action on June 6, 2014, alleging the six counts described above, as well as a seventh count for injunctive relief. [ECF No. 1]. Neovasc moved for partial summary judgment on February 1, 2016, after the parties had completed fact and expert discovery. [ECF No. 290]. The motion requests an order dismissing CardiAQ’s claims for correction of inventorship, fraud, and, to the extent predicated on any form of fraud, Chapter 93A. The Court held oral argument on the motion on March 25, 2016.

II. Fraud

To succeed on its fraud claim, CardiAQ must show that Neovasc made a false representation of material fact, knowing it was false, for the purpose of inducing CardiAQ to act, and that CardiAQ actually relied on the representation. Platten v. HG Bermuda Exempted Ltd., 437 F.3d 118, 132 (1st Cir. 2006). In its complaint, CardiAQ alleged that when Neovasc first contacted CardiAQ, it knew and failed to disclose that it would be developing a competing product. [ECF No. 64 ¶¶ 51-59]. CardiAQ claimed that by knowingly concealing its plans, Neovasc misled and induced CardiAQ to enter into a business relationship and share its confidential information, thereby committing fraud. CardiAQ alleged that “Neovasc Inc. at all times knew that concealing the fact that Neovasc Inc. intended to compete with CardiAQ would

encourage and mislead CardiAQ into sharing with Neovasc Inc. CardiAQ's confidential TMVI technology, trade secrets, and years of know-how." Id. ¶ 53.

In its summary judgment briefing, CardiAQ advances a modified fraud theory. CardiAQ does not now contend that Neovasc knew from the outset of its relationship with CardiAQ that it intended to develop a competing product. Rather, CardiAQ now argues that at some time during the relationship, Neovasc decided to start developing a competing product, at which point Neovasc had a duty to inform CardiAQ of its intentions. CardiAQ argues that "Neovasc's prior statements *became* untrue and misleading when it started developing the Tiara." [ECF No. 315 at 4 (emphasis added)].

"There can be no actionable claim of fraud for failure to disclose in the absence of a duty to disclose." In re Neurontin Mktg., Sales Practices & Products Liab. Litig., 618 F. Supp. 2d 96, 109 (D. Mass. 2009) (quoting Royal Bus. Group, Inc. v. Realist, Inc., 933 F.2d 1056, 1064 (1st Cir. 1991)); see also Taylor v. Am. Chemistry Council, 576 F.3d 16, 31 (1st Cir. 2009) ("Liability for nondisclosure exists under Massachusetts law only where there is a duty to disclose."); Boyle v. Douglas Dynamics, LLC, 292 F. Supp. 2d 198, 200 (D. Mass. 2003), aff'd, 99 F. App'x 243 (1st Cir. 2004) ("In the absence of a specific duty to disclose, there is no liability for an omission of information.") (quotation marks omitted). The question therefore is if and when Neovasc had a duty to disclose that it was developing a competing mitral valve product.

In determining whether a duty to disclose exists, Massachusetts follows the general principles of Section 551 of the Restatement (Second) of Torts. Sparks v. Fid. Nat. Title Ins. Co., 294 F.3d 259, 274 (1st Cir. 2002); see also Smith v. Zipcar, Inc., 125 F. Supp. 3d 340, 344 (D. Mass. 2015) (noting that Massachusetts courts generally rely on Section 551 of the Restatement

(Second) of Torts to determine what circumstances give rise to a duty to disclose); Knapp v. Neptune Towers Assocs., 72 Mass. App. Ct. 502, 507 (2008) (using Restatement (Second) of Torts to describe the limited circumstances under which there is a duty to disclose). Under Subsection 2(c) of Section 551, a duty to disclose arises where "subsequently acquired information . . . will make untrue or misleading a previous representation that when made was true or believed to be so." Restatement (Second) of Torts § 551 (1977). CardiAQ claims that this duty attached as soon as Neovasc started to develop a competing product.

As an initial matter, there is no evidence that Neovasc ever represented that it would not compete with CardiAQ. CardiAQ's co-founder, Mr. Ratz, testified that he did not communicate with Mr. McPherson or anyone at Neovasc about whether Neovasc could build a competing device. [ECF No. 316 ¶¶ 12-13]. Further, though the NDA generally restricted the parties from disclosing or using the other's Confidential Information, it had an exception for when the Confidential Information disclosed by one party was "independently developed" by the other party. [ECF No. 64-2]. The NDA did not have a non-compete clause. Id.

Nonetheless, CardiAQ claims that several early representations made by Neovasc to CardiAQ implied that Neovasc would not compete. These include:

- Neovasc's claim in its initial presentation that its "areas of specialization" were "tissue leaflets for aortic and mitral valves," "surgical patches for vascular and other applications," and "tissue for incorporation into specialized vascular devices."

- Neovasc's statement in the same presentation that it would "partner" with CardiAQ and support CardiAQ through all phases of "design, development, and manufacture."

- Neovasc's promise to safeguard and to not use CardiAQ's Confidential Information.

[ECF No. 315 at 4]. CardiAQ contends that as soon as Neovasc began competing, these prior statements became untrue, and a duty to disclose attached.

To the extent CardiAQ's fraud claim relies on Neovasc's early statements and promises that it would not use CardiAQ's Confidential Information, CardiAQ conflates its breach of contract and fraud claims. There is no evidence that when Neovasc entered the NDA, it intended to use CardiAQ's Confidential Information, and therefore, to the extent Neovasc did eventually improperly use Confidential Information, it sounds in breach of contract and not fraud. See e.g., Kenda Corp. v. Pot O'Gold Money Leagues, Inc., 329 F.3d 216, 226 (1st Cir. 2003) ("[S]tatements of present intention as to future conduct may be the basis for a fraud action if . . . the statements misrepresent the actual intention of the speaker and were relied upon by the recipient to his damage.") (quoting McEvoy Travel Bureau Inc. v. Norton Co., 408 Mass. 704, 710 (1990)); Gerli v. G.K. Hall & Co., 851 F.2d 452, 456 (1st Cir. 1988) ("Under Massachusetts law, a promissory statement cannot be the basis for a claim of misrepresentation unless at the time the promise was made the promissor had no intention of carrying it out."); Thornton v. Harvard Univ., 2 F. Supp. 2d 89, 95 (D. Mass. 1998) ("Statements that are promissory in nature are not actionable as fraud or misrepresentation unless it is shown that the promisor had no intention of fulfilling the promise when it was made, so there was a false representation of present intention.").[2]

[2] At oral argument, CardiAQ argued for the first time that Neovasc had a duty to disclose its competitive activity because it had entered a "fiduciary or other similar relation of trust and confidence" with CardiAQ. [ECF No. 338 at 18]. CardiAQ seemed to argue that because the parties had entered an NDA, they had a relationship of trust and confidence that imposed an affirmative duty of disclosure. "The mere existence of a prior contractual relationship does not, by itself, create a confidential relationship or impose a duty of disclosure." Cent. Massachusetts Television, Inc. v. Amplicon, Inc., 930 F. Supp. 16, 25 (D. Mass. 1996). To the extent Neovasc failed to fulfill any of its obligations under the NDA, these failures can be addressed by the breach of contract claim.

Second, nothing in Neovasc's initial presentation or comments became false when Neovasc starting developing its own TMVI device. Neovasc's identification of its products was accurate when made and Neovasc never represented that the list included all the products it had or would thereafter develop. Likewise, references to Neovasc's customers and CardiAQ as "partners" accurately described Neovasc's tissue business, in which it incorporates tissue into other companies' products. When Neovasc began to develop its own TMVI device in October 2009, the presentation (given in June 2009) may have become incomplete, but it did not become so false and misleading that a duty to disclose attached. Neovasc never affirmatively represented that it would not develop a TMVI device, and therefore it did not need to inform CardiAQ when it began to develop one. See Boyle, 292 F. Supp. 2d at 214-15 (finding that it was "too far a stretch of the imagination to conclude from [defendant's] alleged statements that it was agreeing to give up its fundamental right to establish a distribution network as it saw fit and was committing itself not to add any additional distributors" given that nothing in the defendant's prior statements mentioned distributors or the distribution network); cf. Cambridge Plating Co. v. NAPCO, Inc., 876 F. Supp. 326 (D. Mass. 1995), aff'd in part, vacated in part, 85 F.3d 752 (1st Cir. 1996) (finding that defendant had duty to disclose that static mixer was not installed in water treatment system where defendant had previously provided "drawings containing a depiction of the static mixer as an actual component of the installed System" and therefore, the "drawings amounted to continuing affirmative representations that the static mixer was installed as promised"). Because there is no evidence that Neovasc ever represented to CardiAQ that it would not compete, Neovasc did not have a duty to disclose. As a result, the fraud count must be dismissed.

III. Chapter 93A

Neovasc seeks "partial" summary judgment on CardiAQ's Chapter 93A claim. [ECF No. 291 at 14]. According to Neovasc, "to the extent the [Chapter 93A] cause of action is premised on fraud rather than CardiAQ's distinct allegations of trade secret misuse, the claim fails for the same reasons [as the fraud claim]." Id. Chapter 93A proscribes all "unfair methods of competition and unfair or deceptive acts or practices [made] in the conduct of any trade or commerce." Mass. Gen. Laws. c. 93A, § 2. "A practice or act is unfair under Chapter 93A 'if it is (1) within the penumbra of a common law, statutory, or other established concept of unfairness; (2) immoral, unethical, oppressive, or unscrupulous; or (3) causes substantial injury to competitors or other business people.'" Lance v. PNC Bank, N.A., No. 15-10250-FDS, 2015 WL 5437090, at *5 (D. Mass. Sept. 15, 2015) (quoting Morrison v. Toys "R" Us, Inc., 441 Mass. 451, 457 (2004)).

CardiAQ's failure to establish a fraud claim does not bar its Chapter 93A claim. "[T]he definition of an actionable 'unfair or deceptive act or practice' goes far beyond the scope of the common law action for fraud and deceit." Downey v. Wells Fargo Bank, N.A., No. CIV.A. 12-11340-DJC, 2014 WL 3510510, at *8 (D. Mass. July 11, 2014) (quotation marks omitted). That is particularly true here, given that "Massachusetts case law suggests that one difference between a fraud claim and the more liberal 93A is allowance of a cause of action even in the absence of a duty to disclose." V.S.H. Realty, Inc. v. Texaco, Inc., 757 F.2d 411, 417 (1st Cir. 1985). Accordingly, the Court declines to adopt Neovasc's proposed piece-meal approach to the Chapter 93A claim and denies Neovasc's motion for partial summary judgment. CardiAQ's Chapter 93A claim incorporates all the allegations of the complaint, not just the fraud count, and a jury will determine if Neovasc's conduct collectively constitutes unfair and deceptive conduct.

IV. Correction of Inventorship

Claim 1 of the ’964 Patent claims a method of anchoring a prosthetic valve in a patient’s heart, said method comprising:

> providing the prosthetic valve, wherein the prosthetic valve comprises an anchor having an atrial skirt, an annular region, a ventricular skirt, and a plurality of valve leaflets, wherein the ventricular skirt comprises a first trigonal anchoring tab disposed on an anterior portion of the ventricular skirt, wherein the anchor has a collapsed configuration for delivery to the heart and an expanded configuration for anchoring with the heart;
>
> positioning the prosthetic valve in the patient’s heart;
>
> expanding the atrial skirt radially outward so as to lie over a superior surface of the patient’s native mitral valve, and anchoring the atrial skirt against a portion of the atrium;
>
> radially expanding the annular region of the anchor to conform with and to engage the native mitral valve annulus;
>
> anchoring the first trigonal anchoring tab against a first fibrous trigone on a first side of an anterior leaflet of the native mitral valve, such that the anterior leaflet and adjacent chordae tendineae are captured between the trigonal anchoring tab and an anterior surface of the anchor; and
>
> radially expanding the ventricular skirt thereby displacing the native mitral valve leaflets radially outward.

[ECF No. 293-11 at 60-61]. The ’964 Patent identifies Mr. Lane and Mr. Nyuli, two Neovasc employees, as the sole inventors. Id. at 1. CardiAQ alleges that Dr. Quadri and Mr. Ratz invented the subject matter of independent Claim 1 and dependent Claims 2 through 28 of the ’964 Patent, either by themselves or in collaboration with Neovasc’s representatives, and that the patent should be corrected accordingly.

“Conception is the touchstone to determining inventorship.” Fina Oil & Chem. Co. v. Ewen, 123 F.3d 1466, 1473 (Fed. Cir. 1997). Accordingly, “each joint inventor must generally contribute to the conception of the invention.” Ethicon, Inc. v. U.S. Surgical Corp., 135 F.3d

1456, 1460 (Fed. Cir. 1998). A co-inventor does not need to make a contribution to every claim of a patent. Id. Nor does a co-inventor need to contribute to the conception of all the limitations in a single claim. Eli Lilly & Co. v. Aradigm Corp., 376 F.3d 1352, 1361 (Fed. Cir. 2004). Rather, a joint inventor's contribution must be "not insignificant in quality, when that contribution is measured against the dimension of the full invention." Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs., Inc., 776 F.3d 837, 845 (Fed. Cir. 2015), cert. denied, 136 S. Ct. 189 (2015) (quoting Fina Oil & Chem. Co., 123 F.3d at 1473). Each joint inventor needs to "perform only a part of the task which produces the invention." Ethicon, Inc., 135 F.3d at 1460; see also Vanderbilt Univ. v. ICOS Corp., 601 F.3d 1297, 1303 (Fed. Cir. 2010) ("The qualitative contribution of each collaborator is key—each inventor must contribute to the joint arrival at a definite and permanent idea of the invention as it will be used in practice.") (quoting Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1229 (Fed. Cir. 1994)). To be a joint inventor, "one need not alone conceive of the entire invention, for this would obviate the concept of joint invention." Fina Oil & Chem. Co., 123 F.3d at 1473.

Joint inventorship requires collaboration. "Co-Inventors must collaborate and work together to collectively have a definite and permanent idea of the complete invention." Vanderbilt Univ., 601 F.3d at 1308. The inventors must "have some open line of communications during or in temporary proximity to their inventive efforts." Eli Lilly & Co., 376 F.3d at 1359.

Patents issued by the USPTO are presumed to name the correct inventors and, as a result, "the burden of showing misjoinder or nonjoinder of inventors is a heavy one and must be proved by clear and convincing evidence." Bard Peripheral Vascular, Inc., 776 F.3d at 845. Inventorship is a question of law. General Elec. Co. v. Wilkins, 750 F.3d 1324, 1329 (Fed. Cir. 2014).

Nonetheless, the "determination of whether a person is a joint inventor is fact specific, and no bright-line standard will suffice in every case." Fina Oil and Chem. Co., 123 F.3d at 1473.

Alleged co-inventors "must prove their contribution to the conception of the invention with more than their own testimony." Gemstar-TV Guide Int'l., Inc. v, Int'l Trade Comm's, 383 F.3d 1352, 1382 (Fed Cir. 2004). "The putative inventor must first provide credible testimony," after which the Court applies a rule-of-reason analysis to determine whether the co-inventor's testimony has been sufficiently corroborated. General Elec. Co., 750 F.3d at 1330. Corroborating evidence can include "contemporaneous records, oral testimony from someone other than the inventor, or other circumstantial evidence." Univ. of Utah v. Max-Planck-Gesellschaft Zur Foerderung Der Wissenschaften e.V., No. 11-10484-PBS, 2015 WL 5698398, at *5 (D. Mass. Sept. 28, 2015), appeal dismissed (Dec. 18, 2015).

Neovasc makes two primary arguments in support of its motion for summary judgment: first, that CardiAQ never communicated to Neovasc a specific method of anchoring, and second, that the information CardiAQ communicated to Neovasc was incorporated into the prior art before Neovasc filed its '964 Patent application.

Neovasc's first argument focuses on a single limitation of the '964 Patent. The '964 Patent independent claim requires, among other things, anchoring against a "fibrous trigone." [ECF No. 293-11 at 60]. Neovasc argues that because CardiAQ never communicated any specific method of anchoring, it could not have co-invented that feature. Neovasc relies on statements from both Mr. Ratz and Dr. Quadri that they never discussed, internally or with Neovasc, anchoring the TMVI device against a fibrous trigone. Mr. Ratz testified that he "did not discuss fibrous trigones" with Mr. Lane, and Dr. Quadri testified that until this lawsuit was filed, he had never heard the term fibrous trigones used internally at CardiAQ. [ECF No. ¶¶ 26-27].

CardiAQ counters that even if they did not specifically discuss the fibrous trigone, at least one of the anchors on their later designs necessarily anchors against a fibrous trigone. [ECF No. 328 ¶ 71]. Anchoring against the fibrous trigones was therefore, according to CardiAQ, implicit in the designs and information it shared with Neovasc.

Regardless of whether CardiAQ conceived of the idea of anchoring against the fibrous trigone, which is a disputed fact for trial, Neovasc's argument misconstrues the standard for joint inventorship. Neovasc claims that because one limitation of Claim 1 was not communicated by Mr. Ratz and Dr. Quadri to Neovasc, the joint inventorship claim fails. A joint inventor, however, "does not need to contribute to every single element of every single claim in the patents—'some' contribution is sufficient." Rothschild v. Cree, Inc., 711 F. Supp. 2d 173, 204 (D. Mass. 2010) (citing 35 U.S.C. § 116); see also Ethicon, Inc., 135 F.3d at 1460 (each joint inventor "needs to perform only a part of the task which produces the invention").

Even assuming Neovasc independently conceived of the anchoring limitation, CardiAQ has presented evidence that it contributed other inventive ideas that were incorporated into the patent. According to CardiAQ, the TMVI devices that CardiAQ conceived of and disclosed to Neovasc included a combination of the following features, most of which are also included in the independent claim of the patent: a prosthetic valve having a radially-expandable annular region designed to conform with and engage the native mitral valve annulus, a ventricular skirt that displaces the native mitral valve leaflets radially outward, a plurality of valve leaflets, a prosthetic valve covered with tissue or a synthetic material, and ventricular anchors that anchor against the native mitral annulus such that the native mitral leaflets and adjacent chordae are captured between the anchor and the body of the TMVI device. [ECF No. 328 ¶ 57]. Neovasc's narrow focus on whether CardiAQ conceived of anchoring on the fibrous trigone overlooks

CardiAQ's other alleged contributions to conception of the invention. To be a joint inventor, an individual must make a contribution to the claimed invention "that is not insignificant in quality, when that contribution is measured against the dimension of the *full* invention." Fina Oil and Chem. Co., 123 F.3d at 1473 (emphasis added). Neovasc asks the Court to ignore the full invention, and instead look at a single component. Even if Neovasc could show that it alone conceived of anchoring against the fibrous trigone, it would not be entitled to summary judgment, given the substantial communication between CardiAQ and Neovasc regarding other features of the patent and the similarities between CardiAQ's TMVI device and Neovasc's patented method.

Second, Neovasc claims that CardiAQ's joint inventorship claim is barred by the so-called prior-publication rule. "A contribution of information in the prior art cannot give rise to joint inventorship because it is not a contribution to conception." Eli Lilly & Co., 376 F.3d at 1362. Neovasc argues that in a handful of public documents disseminated in 2009 and 2010, CardiAQ made public the information that it communicated to Neovasc, and that as a result, CardiAQ's purported contributions to the invention cannot support an inventorship claim. Neovasc specifically alleges that:

- On September 25, 2009, CardiAQ disclosed an image of Revision C ("Rev. C") of its TMVI device at an industry conference, touting its "secure anchoring," "impact on subvalvular apparatus, and ability to seal to MV Annulus."

- On April 1, 2010 CardiAQ disclosed Rev. C of its device in a patent application, with detailed depictions of the device and its anchors.

- CardiAQ gave presentations in June and September 2010 that disclosed images of Revision E ("Rev. E") if its TMVI device implanted in a pig.

- On September 22, 2010 at an industry conference, CardiAQ's Dr. Quadri disclosed images of Rev. E, along with a computer design drawing and

> explanation of the "proprietary system for anchoring to [mitral valve] annulus."

[ECF No. 302 at 19-20]. All of these publications occurred towards the end of, or after, the business relationship between CardiAQ and Neovasc, which lasted from June 2009 to March 2010. CardiAQ alleges, and Neovasc does not dispute, that it shared its physical prototype Rev. C frames with Neovasc in July 2009, two months before the publication of the Rev. C image and almost nine months before the publication of CardiAQ's patent application on April 1, 2010. [ECF No. 328 ¶ 29]. Likewise, CardiAQ sent samples and design schematics of its Rev. E design to Neovasc in February 2010, before the June and September 2010 publications that included images of the Rev. E device. Id. ¶¶ 37. Therefore, CardiAQ argues that it contributed to the joint invention before anything was published. [ECF No. 315 at 22 ("The issue is not whether CardiAQ published *anything* prior to Neovasc filing its patent application, but whether CardiAQ published its *inventive contribution* prior to sharing it and collaborating with Neovasc.")]. Neovasc contends that this is irrelevant and that so long as the information CardiAQ shared confidentially was published at some point before Neovasc filed the patent application, it constitutes prior art that cannot support a claim for joint inventorship. [ECF No. 327 at 15-16].

Given the extensive interaction between Neovasc and CardiAQ before any public disclosures were made, the Court finds Neovasc's prior art argument unavailing. Mr. Lane first sketched what would become Neovasc's TMVI device in October 2009, before all but one of the publications described above, and after months of communication and collaboration between Neovasc and CardiAQ, including the exchange of emails, prototypes, and design schematics. [ECF No. 316 ¶ 21]. Further, Neovasc first communicated the ideas for its patent to its patent attorney on December 1, 2009, in the midst of the parties' working relationship and again, before all but one of the publications described above. [ECF No. 328 ¶ 76]. And finally, the face of the

'964 patent claims as its earliest application date May 5, 2010. [ECF No. 328 ¶ 77]. By that time, CardiAQ had sent samples of its Rev. E design (the most advanced prototype) to Neovasc, images of which were not publically disclosed until June 2010. [ECF No. 328 ¶ 37; ECF No. 316 ¶ 43]. Accordingly, CardiAQ could have contributed to the conception of the invention *before* its information became public and incorporated into the prior art. See Eli Lilly & Co., 376 F.3d at 1362 (noting that "prior art cannot give rise to joint inventorship because it is not a contribution to conception").

Moreover, fact questions remain as to whether the five publications fully disclosed the inventive contributions at issue. None of the publications reveal CardiAQ's design history or what led CardiAQ to change its anchoring mechanism from Rev. C to Revs. D and E, all of which CardiAQ shared with Neovasc. Likewise, Neovasc does not allege that the physical prototypes and engineering drawings that CardiAQ shared with Neovasc were ever made public. The September 2009 presentation, the only presentation made during and not after their business relationship, included only obstructed and grainy images of an early version of CardiAQ's TMVI device, and very generally touted its "secure anchoring," "impact on subvalvular apparatus, and ability to seal to MV Annulus." [ECF No. 304 at 37-46]. This 10-page presentation, which simply provided a high-level overview of CardiAQ's ongoing development of a TMVI device, does not come close to including all of the information confidentially communicated by CardiAQ to Neovasc.

Neovasc contends that a recent District of Massachusetts decision, Univ. of Utah v. Max-Planck-Gesellschaft Zur Foerderung Der Wissenschaften e.V., No. 11-10484-PBS, 2015 WL 5698398 (D. Mass. Sept. 28, 2015), appeal dismissed (Dec. 18, 2015), supports its prior art argument. In University of Utah, Judge Saris granted defendants' motion for summary judgment

as to plaintiff's correction of inventorship claim. Plaintiff, the University of Utah, had claimed that its faculty member, Dr. Brenda Bass, should be named as a joint inventor on a family of patents, the Tuschl II Patents. Id. at *1. The University of Utah argued that Dr. Bass had shared a draft publication (the "minireview") with one of the inventors named in the relevant patents, Dr. Tuschl. Id. at *3. This minireview, according to the University of Utah, identified a "critical structural characteristic" that was claimed in the patents, and accordingly, Dr. Bass had contributed to the conception of the invention. Id. at *6. The minireview appeared in *Cell* magazine 23 days after Dr. Bass shared it with Dr. Tuschl. Id. at *2-3.

Judge Saris found that once the article went to press, Dr. Bass' research was "assimilated into the storehouse of knowledge that comprises ordinary skill in the art," and thereafter could be appropriated into the patent. Id. at *7. She therefore evaluated the 23 days in which the minireview was not public. She examined whether, in that short time, Dr. Bass and Dr. Tuschl had collaborated in support of joint inventorship. She found that they had not—merely sharing an article did not constitute collaboration, where there was no evidence that "they worked together, spoke together, or had preserved any open line of communication during the relevant three-week period." Id.

Judge Saris' opinion in University of Utah does not support Neovasc's prior art argument. That Judge Saris considered the three-week period before the article was published demonstrates that a claim for joint inventorship can arise based on information that is shared confidentiality before it is made public. Moreover, Judge Saris' opinion shows why summary judgment would be particularly inappropriate here. First, in University of Utah, the information that was initially shared in confidence was then published in *Cell* in its entirety three weeks later. Here, in contrast, the publically shared information was only a small portion of the information

shared with Neovasc by CardiAQ. Second, in University of Utah, there was virtually no communication or collaboration between the plaintiff and the named-inventor, other than the exchange of the minireview. Judge Saris noted that there was "no evidence that [Dr. Bass and Tuschl] worked together, spoke together, or had preserved any open line of communication during the relevant three-week period." Here, there was extensive information-sharing over a 10-month period, during and after which a handful of related documents were published. The information eventually made public by CardiAQ was far narrower than what it disclosed to Neovasc, and Neovasc therefore cannot use the five public documents to discount all the contributions CardiAQ may have made to the conception of the '964 Patent, at least not on summary judgment.

A co-inventor "must contribute in some significant manner to the conception or reduction to practice of the invention [and] make contribution to the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention." General Elec. Co., 750 F.3d at 1332. CardiAQ has offered sufficient proof that it contributed to the conception of the '964 patent. It remains to be seen whether CardiAQ can show, by clear and convincing evidence, that the patent should be corrected, but it would be premature to dismiss the inventorship claim at this time.

V. Conclusion

For the reasons set forth above, Neovasc's Motion for Partial Summary Judgment is granted as to Count IV (the fraud count) and denied as to Counts I and VI (for correction of inventorship and Chapter 93A).

SO ORDERED.

Dated: April 25, 2016

/s/ Allison D. Burroughs
ALLISON D. BURROUGHS
U.S. DISTRICT COURT JUDGE